

Application No. 10/811,782  
Amendment dated November 4, 2006  
Reply to Office Action of July 6, 2006

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Docket No.: 20028-7003

### **AMENDMENTS TO THE CLAIMS**

- Claim 1 (Original): A radiation wave intensity modulator, comprising:
- a first element for producing a wave component from a radiation wave, said wave component having a polarization property wherein said polarization property is one polarization from a set of orthogonal polarizations;
  - an optical transport for receiving said wave component, said transport having a waveguiding region and one or more guiding regions coupled to said waveguiding region;
  - a transport influencer, operatively coupled to said optical transport and having at least a portion integrated with one or more guiding regions of said one or more guiding regions, for affecting said polarization property of said wave component responsive to a control signal; and
  - a second element for interacting with said affected wave component wherein an intensity of said wave component is varied responsive to said control signal.
- Claim 2 (Original): The modulator of claim 1 wherein said first element and said second element are polarization filters.
- Claim 3 (Original): The modulator of claim 1 wherein said elements are integrated into said transport.
- Claim 4 (Original): The modulator of claim 1 wherein said influencer produces a controllable magnetic field parallel to a propagation direction of said wave through said transport to alter said polarization property.
- Claim 5 (Original): The modulator of claim 1 wherein said influencer alters said polarization property by changing a rotation angle of said wave

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component in a range from about zero degrees to about ninety degrees.

Claim 6 (Original): The modulator of claim 1 wherein said transport is a fiber waveguide including a core and a cladding corresponding to one or more guiding regions of said one or more guiding regions and wherein said influencer includes a magnetic material integrated with said cladding.

Claim 7 (Original): The modulator of claim 6 wherein said magnetic material includes permanent magnetic material.

Claim 8 (Original): The modulator of claim 6 wherein said magnetic material is selectively magnetized responsive to an electric current.

Claim 9 (Original): The modulator of claim 6 wherein said magnetic material is integrated into said fiber waveguide.

Claim 10 (Original): The modulator of claim 5 wherein said elements are circular polarization filters having a crossed transmission orientation.

Claim 11 (Original): The modulator of claim 5 wherein said elements are circular polarization filters having an aligned transmission orientation.

Claim 12 (Original): The modulator of claim 1 wherein said wave component may be extinguished.

Claim 13 (Original): The modulator of claim 1 wherein said set of orthogonal polarization includes right hand circular polarization and left hand circular polarization.

Claims 14 – 26 (Canceled).

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Claim 27 (Amended): A radiation wave intensity modulating apparatus, comprising:

- means for producing a wave component from a radiation wave, said wave component having a polarization property wherein said polarization property is one polarization from a set of orthogonal polarizations;
- means for receiving said wave component by a transport having a waveguiding region and one or more guiding regions coupled to said waveguiding region;
- means for dynamically and variably affecting said polarization property of said wave component responsive to a varying control signal using an influencer having at least a portion integrated with one or more guiding regions of said one or more guiding regions; and
- means for interacting with said affected wave component to produce an output wave component wherein an intensity of said output wave component is varied over a range of intensities responsive to said varying control signal, said range of intensities including a minimum radiation intensity that extinguishes said output wave component.

Claim 28 (Original): The apparatus of claim 27 wherein said producing step includes use of a first element, wherein said interacting step includes use of a second element, and wherein said first element and said second element are polarization filters.

Claim 29 (Original): The apparatus of claim 27 wherein said producing step includes use of a first element, wherein said interacting step includes use of a second element, and wherein said elements are integrated into said transport.

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Claim 30 (Original): The apparatus of claim 27 wherein said influencer produces a controllable magnetic field parallel to a propagation direction of said wave through said transport to alter said polarization property.

Claim 31 (Original): The apparatus of claim 27 wherein said influencer alters said polarization property by changing a rotation angle of said wave component in a range from about zero degrees to about ninety degrees.

Claim 32 (Original): The apparatus of claim 27 wherein said transport is a fiber waveguide including a core and a cladding corresponding to one or more guiding regions of said one or more guiding regions and wherein said influencer includes a magnetic material proximate said cladding.

Claim 33 (Original): The apparatus of claim 32 wherein said magnetic material includes permanent magnetic material.

Claim 34 (Original): The apparatus of claim 32 wherein said magnetic material is selectively magnetized responsive to an electric current.

Claim 35 (Original): The apparatus of claim 32 wherein said magnetic material is integrated into said fiber waveguide.

Claim 36 (Original): The apparatus of claim 31 wherein said producing step includes use of a first element, wherein said interacting step includes use of a second element, and wherein said elements are circular polarization filters having a crossed transmission orientation.

Claim 37 (Original): The apparatus of claim 31 wherein said producing step includes use of a first element, wherein said interacting step includes

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use of a second element, and wherein said elements are circular polarization filters having an aligned transmission orientation.

Claim 38 (Original): The apparatus of claim 27 wherein said wave component may be extinguished.

Claim 39 (Original): The apparatus of claim 27 wherein said set of orthogonal polarization includes right hand circular polarization and left hand circular polarization.

Claim 40 (Amended): A radiation wave intensity modulator, comprising:  
a first polarizer for producing a wave component from a radiation source, said wave component having a polarization property wherein said polarization property is one polarization from a set of orthogonal polarizations;  
a fiber waveguide for receiving said wave component, said waveguide having a core and one or more guiding regions disposed around said core;  
a variable magnetic field generating structure, at least of portion of which is integrated with and operatively coupled to one or more of said one or more guiding regions during manufacture of said fiber waveguide, for affecting said polarization property of said wave component in said core responsive to a control signal; and  
a second polarizer for interacting with said affected wave component wherein an intensity of said wave component is varied over a range of intensities responsive to said control signal, said range of intensities including a minimum radiation intensity that extinguishes said output wave component.

Claims 41 – 66 (Canceled)

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Claim 67 (New): A radiation wave intensity modulator, comprising:

a first element for producing a wave component from a radiation wave,  
said wave component having a polarization property wherein said  
polarization property is one polarization from a set of orthogonal  
polarizations;

an optical transport for receiving said wave component, said transport  
having a waveguiding region and one or more guiding regions coupled  
to said waveguiding region;

a transport influencer, operatively coupled to said optical transport and  
having at least a portion integrated with one or more guiding regions of  
said one or more guiding regions during manufacture of said optical  
transport, for dynamically and variably affecting said polarization  
property of said wave component responsive to a varying control  
signal; and

a second element for interacting with said affected wave component to  
produce an output wave component wherein an intensity of said  
output wave component is varied over a range of intensities  
responsive to said varying control signal, said range of intensities  
including a minimum radiation intensity that extinguishes said output  
wave component.

Claim 68 (New): The modulator of claim 67 wherein said first element and  
said second element are polarization filters.

Claim 69 (New): The modulator of claim 67 wherein said elements are  
integrated into said transport during manufacture of said transport.

Claim 70 (New): The modulator of claim 67 wherein said influencer produces  
a controllable magnetic field parallel to a propagation direction of said  
wave through said transport to alter said polarization property.

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Claim 71 (New): The modulator of claim 67 wherein said influencer alters said polarization property by changing a rotation angle of said output wave component over a range from about zero degrees to about ninety degrees.

Claim 72 (New): The modulator of claim 67 wherein said transport is a fiber waveguide including a core and a cladding corresponding to one or more guiding regions of said one or more guiding regions and wherein said influencer includes a magnetic material integrated with said cladding during manufacture of said fiber waveguide.

Claim 73 (New): The modulator of claim 72 wherein said magnetic material includes permanent magnetic material.

Claim 74 (New): The modulator of claim 72 wherein said magnetic material is selectively magnetized responsive to an electric current.

Claim 75 (New): The modulator of claim 72 wherein said magnetic material is integrated into said fiber waveguide during manufacture of said fiber waveguide.

Claim 76 (New): The modulator of claim 71 wherein said elements are circular polarization filters having a crossed transmission orientation.

Claim 77 (New): The modulator of claim 71 wherein said elements are circular polarization filters having an aligned transmission orientation.

Claim 78 (New): The modulator of claim 67 wherein said set of orthogonal polarization includes right hand circular polarization and left hand circular polarization.